

## EDUCATION

### Ph.D. in Computer Science

University of Victoria • GPA: 3.85/4.0  
Exp. Dec 2020 | Victoria, Canada  
Thesis topic: Continuous software evolution at run-time


### M.Sc. in Software Engineering

Universidad Icesi • GPA: 3.87/4.0  
Aug 2016 | Cali, Colombia  
Thesis: [A framework for generating and deploying dynamic performance monitors for self-adaptive systems](#)

### B.E. in Systems Engineering

Universidad Icesi • GPA: 3.21/4.0  
Feb 2014 | Cali, Colombia  
Dean's List—Semesters VI, VII, VIII & IX  
Thesis: [PaSCAni: A language for V&V of functional requirements at run-time](#)

## CONTINUING EDUCATION

 Machine Learning and IoT Foundations—IBM ([Badge](#))

 Software Engineering Lifecycle of IoT Systems—NSERC DITA

 Entrepreneurship Laboratory with Mobile Technologies—MITAITI

## SKILLS

### TECHNICAL SKILLS

Architecture Design  
Containerized Applications  
Continuous Delivery  
Cloud Computing  
Data mining (basic)  
Infrastructure as Code  
Language Engineering  
Object Oriented Programming  
Performance Monitoring  
Software Deployment  
Web programming

### PROGRAMMING

Java • Xtend • JavaScript • CSS •  
HTML • C • Python •  $\LaTeX$  • C#  
• Shell • Android (familiar) • SQL

### PERSONAL INTERESTS

Gym, Soccer, Hackathons

## ONLINE PROFILES

[github.com/jachinte](https://github.com/jachinte)  
[linkedin.com/in/jachinte](https://linkedin.com/in/jachinte)

## RESEARCH EXPERIENCE

### Graduate Research Assistant | Rigi Research Group

Aug 2016 – Present | University of Victoria, Canada

- Published 9 academic papers so far and submitted a patent application.
- Participate in the following industry collaborative projects as a lead student, occasionally visiting the IBM Toronto Lab to identify and validate research challenges:

#### Reverse Engineering Deployment Specifications from Running Systems

*In collaboration with IBM (ongoing)*

- Study feasible solutions to assist companies in migrating from ad-hoc infrastructure management to Infrastructure-as-Code (IaC) using Terraform. This includes the design of a reverse engineering mechanism to introspect deployed infrastructures and to generate the representative deployment specification.
- Evaluate integration scenarios for IBM Cloud Automation Manager and VMware vSphere with round-trip engineering mechanisms for Terraform templates.
- Implemented a proof of concept middleware to support the automated evolution of IaC specifications based on run-time adaptations to the subject infrastructure.

#### Continuous Software Evolution at Run-time

*In collaboration with IBM (ongoing)*

- Identify research challenges and explore the use of continuous experimentation to perform quality-oriented engineering tasks at runtime.
- Integrate a state-of-the-art reference model for self-adaptive systems with practices of continuous software engineering, so that managing systems contribute to the design-time evolution of managed systems.
- Proposed an architectural framework for quality-driven adaptive continuous experimentation. This proposal allows managing systems to plan and conduct experiments with respect to the software architecture and the configuration of the infrastructure.

#### Cognitive IoT Recipe Maven

*In collaboration with IBM*

- Participated in the design and development of a conversational agent for the smart kitchen based on integrated user, fridge and grocery store contexts.
- Implemented a ReactJS web application as front-end for a smart recipe recommender.
- Implemented an Android application for the management of dietary restrictions.

### Graduate Research Assistant | i2T/DRISO Research Group

Jan 2014 – Aug 2016 | Universidad Icesi, Colombia

- Published 3 academic papers.
- Participated in the following industry collaborative projects as a young researcher:

#### Processing of Large and Complex XML Documents

*In collaboration with Carvajal T&S*

- Created [Amelia](#), a domain-specific language to automate the configuration and deployment of more than 300 experimental trials. The language addressed the following challenges: variability in architectural configurations, dependency management, coordination control, modularity and composability, reusability and extensibility.
- Created [PaSCAni](#), a domain-specific language to specify, generate and deploy performance monitors to introspect service-oriented applications at run-time.

#### Context-Driven Route Optimization: A Home-Health Case

*In collaboration with Carvajal T&S*

- Participated in technology transfer activities to adapt the asymmetric traveling salesman problem with time windows (ATSP-TW) to Carvajal's home-health product.
- Implemented a test case generator for the ATSP-TW. The generator uses a uniform distribution to randomly select values from categorical variables.
- Compared and characterized major providers of map libraries and APIs.
- Investigated and characterized Java libraries to solve the traveling salesman problem.

### Research Assistant Intern | i2T/DRISO Research Group

Jun 2013 – Dec 2013 | Universidad Icesi, Colombia

Proposed and implemented various component-based strategies for the matrix chain multiplication problem and conducted quantitative experiments to test their scalability.

## INDUSTRY EXPERIENCE

### Freelance Developer

#### Carvajal Espacios

2015 | Cali, Colombia

- Developed a Java web application using Play! framework for the purchasing department to manage raw material catalogs and suppliers as well as material search statistics. As part of the development, designed the database relations and integrated the charting library Highcharts into the application.
- Led meetings with the customer to elicit the software requirements, and coordinated with the IT team to integrate an existing LDAP server and to deploy the application to the customer's infrastructure.
- Effectively planned and coordinated development tasks and meetings with the customer.

#### Laboratorios LaFrancol

2015 | Cali, Colombia

- Developed a web application for the purchasing department to create online auctions and invite partner suppliers to bid.
- Implemented a NodeJS server to handle live bids through WebSockets and an ASP.NET MVC web app using the Entity Framework.
- Led meetings with the customer for requirements elicitation and training sessions with the target users.

#### SQL Soluciones Informáticas

2012 | Cali, Colombia

- Advised the customer on hardware and software purchasing and technical decision making.
- Developed an information system for a premier trolley service for ticket management, printing and selling. Implemented the system using ASP.NET MVC and Entity Framework.

### Software Developer | SQL Soluciones Informáticas

2009 – 2010 | Cali, Colombia

- Deployed and managed the corporate website, customer support portal, and online store using Joomla! and Magento.
- Developed a PHP content management site for documentation and video tutorials, increasing customer satisfaction and supporting a market expansion. Recorded and edited more than 90 training videos.
- Designed advertisement for digital and print marketing campaigns.

---

## TEACHING AND MENTORING EXPERIENCE

### Lead Graduate Teaching Assistant | Fundamentals of Programming with Engineering Applications

2016 - 2018 | University of Victoria

- Lectured weekly labs and assisted students with programming and lab assignments.
- Co-led weekly meetings and developed teaching material and quizzes.
- Developed [grade-buddy](#) to assist teaching assistants and professors in automating the marking of programming assignments.
- Developed an [installation assistant](#) to ease the installation of CLion and its dependencies on Windows, Mac and Linux.
- Developed [examgen](#), a program to generate examinations along with their solutions from a YAML input file. The resulting files are rendered to either  $\LaTeX$  or Moodle. Examgen allowed us to stop printing **2800** quizzes and reduced marking time by **30h** per term.
- Deployed and managed an online platform to host and mark programming assignments.

### Graduate Consultant | Assistance Centre in Computer Science

Spring 2018 | University of Victoria

- Tutored students and assisted them with programming assignments in one-on-one sessions for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year courses.

### Graduate Teaching Assistant | Data Structures

Fall 2016 | University of Victoria

- Lectured weekly labs and assisted students with lab assignments.
- Developed scripts to mark programming assignments.

### Undergraduate Degree Project Supervisor | Interactive Media Design Program

2014 - 2015 | Universidad Icesi

- Knowledge management and dissemination: Alternative soccer culture.
- Folii: A natural and interactive encyclopedia mediated by citizen science.
- An information system for bicycle transportation.

### Undergraduate Teaching Assistant | Data Structures

Spring 2011 | Universidad Icesi

- Graded assignments and assisted students during weekly labs.

---

## HONORS AND AWARDS

- 2019 🏆 [First place](#) in DITA Hackathon, IBM
- 2019 🏆 Best Poster Presentation, CSER/SEMLA
- 2018+ CRA-URMD Travel Scholarship (2 times)
- 2017+ UVic Graduate Award (3 times)
- 2017 Howard E. Petch Scholarship
- 2017 IBM Advanced Studies Grant, IBM
- 2017 🏆 [Cleanest Code](#) at HackUVic
- 2016 UVic Doctoral Fellowship, U. of Victoria
- 2014 Master's Degree Scholarship, U. Icesi
- 2014 Young Researcher Fellowship
- 2014 100% Student Loan Waiver, ICETEX
- 2013 🏆 Top ECAES Exam, ICFES
- 2009 Bachelor's Degree Scholarship, U. Icesi